PROJECT FACT SHEET

CONTRACT TITLE: Post Waterflood CO2 Miscible Flood in Light Oil Fluvial-Dominated Deltaic Reservoirs -- Class I

ID NUMBER: DE-FC22-93BC14960

B & R CODE: AC1010000

DOE PROGRAM MANAGER:
NAME: Guido DeHoratiis
PHONE: (202) 586-7296

DOE PROJECT MANAGER:
NAME: Gary Walker
LOCATION: NPTO
PHONE: (918) 699-2083

PROJECT SITE
CITY: Port Neches Field **STATE:** TX
CITY: Orange County **STATE:** TX
CITY: **STATE:**

CONTRACTOR: Texaco E&P

ADDR: 400 Poydrass Street

New Orleans, LA 70130

PRINCIPAL INVESTIGATOR:
NAME: Tim Tipton
PHONE: (504) 680-1728
FAX: (504) 680-6577
INTERNET ADDRESS:

CONTRACT PERFORMANCE PERIOD:
06/01/1993 to 12/31/1997

PROGRAM: Field Demonstration
RESEARCH AREA: Class 1

FUNDING ($1000'S)	DOE	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	8,524	15,410	23,934
FISCAL YR 1998	0	0	0
FUTURE FUNDS	0	0	0
TOTAL EST'D FUNDS	8,524	15,410	23,934

OBJECTIVE: This project will use a combination of a CO2 miscible flood and horizontal gas injection to increase production in a watered-out salt dome reservoir. The site of the proposed project is the Port Neches Field in southeastern Texas. The process will be compared in two adjacent fault-block reservoirs, one producing under partial water drive conditions and the other post-waterflood.

PROJECT DESCRIPTION:
Work to be performed: Final termination of CO2 project. Preparation of final project report.

April 1998

PROJECT DESCRIPTION (Continued)

Background: This project involves CO2 flooding of pressure-depleted Marginulina sands in the Port Neches field. Production was discovered in 1929. Two fault blocks are involved in this project with the strength of water drive varying between fault blocks. In the larger fault block, reservoir pressure had declined 2,700 psi to 100 psi when waterflooding was started in 1965. Water drive support was somewhat stronger in the smaller fault block, which had not been waterflooded. Primary production in the larger and smaller fault blocks was 40.4% and 42.9% of the OOIP, respectively. Waterflooding had recovered an additional 14.4% of the OOIP from the larger fault block. Before the project, production from the larger fault block was only 25 BOPD and 1,200 BWPD. One well in the smaller fault block produced 5 BOPD and 50 BWPD. The project required the installation of CO2 facilities. Liquid CO2 was purchased, transported to the field via a four-inch pipeline, then injected. Initial operations focused on the larger fault block. There, plans were to first inject salt water to raise reservoir pressure, then begin CO2 injection using a horizontal CO2 injection well injecting at the water-oil contact. As planned, Texaco injected salt water to raise reservoir pressure, then began injecting CO2 in 1993 in vertical injection wells. The planned horizontal CO2 injection well was drilled in early 1994, but mechanical problems limited the horizontal section to only 250 ft rather than the planned 1,500 ft. To control premature CO2 breakthrough, CO2 and water are alternately being injected in the injection wells. The 3-D seismic data indicate that the smaller fault block area is too small to justify CO2 flooding, so CO2 huff-'n'-puff treatments are being used.

PROJECT STATUS:

Current Work: Cessation of CO2 recycling and the plugging and abandonment of injection and producing wells. Removal of CO2 distribution and gathering systems. Project completed as of December 1997.

Scheduled Milestones:

Contract awarded	06/93
CO2 injection began	09/93
Horizontal CO2 injector drilled and completed	01/94
Technology Transfer:	
Industry workshop sponsored by Texaco & Texas A&M at Prairie View, Texas	02/97
Reservoir Characterization Topical Report	01/97
CO2 Screening Model released at open forum	04/94
Final Project Results Topical Report	12/97

Accomplishments: Ten workovers completed, unitization approved, and reservoir pressure raised from 1850 psi to 2350 psi. Conducted an extensive 3-D compositional simulation study to model reservoir performance. Developed, in conjunction with LSU Petroleum Engineering Department, a reservoir model screening tool for the CO2 miscible process. One hundred and ninety seven light oil, waterflooded Louisiana reservoirs were screened for CO2 applicability. Developed a reliable analytical method for tertiary reserves prediction, production rates and CO2 volumes using type curves. Proved the WAG process to be an effective mobility control method in highly permeable sands.